CLAIMS

1. Polyester fibers comprising, as a principal component, a polyester polymer and having an individual fiber thickness of 0.1 to 1.0 dtex,

wherein

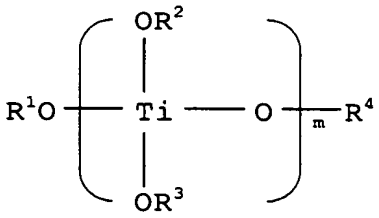
the polyester polymer is one produced by polycondensing an aromatic dicarboxylate ester in the presence of a catalyst,

the catalyst comprises at least one member selected from the mixtures (1) and reaction products (2) as specified below,

the mixture (1) for the catalyst comprises

(A) a titanium compound component comprising at least one member selected from the group consisting of:

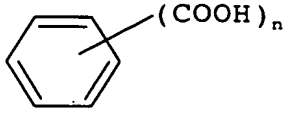
(a) titanium alkoxides represented by the general formula (I):



(I)

in which formula (I), R^1, R^2, R^3 and R^4 respectively and independently from each other represent a member selected from alkyl groups having 1 to 20 carbon atoms and a phenyl group, m represent an integer of 1 to 4, and when m represents an integer of 2, 3 or 4, the 2, 3 or 4 R^2s and R^3s may be respectively the same as each other or different from each other, and

(b) reaction products of the titanium alkoxides of the general formula (I) with aromatic polycarboxylic acids represented by the formula (II):

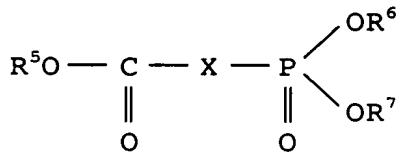


(II)

in which formula (II), n represents an integer of 2 to 4, or anhydrides of the acids of the formula (II), and mixed

with

(B) a phosphorus compound component comprising at least one phosphorus compound represented by the general formula (III):



(III)

in which formula (III), R^5, R^6 and R^7 respectively and independently from each other represent an alkyl group having 1 to 4 carbon atoms, X represents a member selected from a $-CH_2-$ group and a $-CH(Y)-$ group (wherein Y represents a phenyl group),

the mixture (1) for the catalyst for the polycondensation being employed in an amount satisfying the requirements represented by the following expressions of relation (i) and (ii):

$$1 \leqq M_p/M_{Ti} \leqq 15 \qquad \text{(i)}$$

and

$$10 \leqq M_p + M_{Ti} \leqq 100 \qquad \text{(ii)}$$

wherein M_{Ti} represents a ratio in% of a value in milli mole of titanium element contained in the titanium compound component (A) to a value in mole of the aromatic dicarboxylate ester, and M_p represents a ratio in% of a value in milli mole of phosphorus element contained in the phosphorus compound component (A) to the value in mole of the aromatic dicarboxylate ester; and

the reaction products (2) for the catalyst comprises (C) a titanium compound component comprising at least one member selected from the groups consisting of:

(c) titanium alkoxides represented by the general formula (I) and

(d) reaction products of the titanium alkoxides of the general formula (I) with aromatic polycarboxylic acids represented by the above-mentioned general formula (II) or anhydride of the acids; and reacted with

(D) a phosphorus compound component comprising at least one phorous compound represented by the general formula (IV):

$$(R^8O)_p - \underset{\underset{O}{\|}}{P} - (OH)_{3-p} \qquad (IV)$$

in which formula (IV), R^8 represents an alkyl group having 1 to 20 carbon atoms or an aryl group having 6 to 20 carbon atoms, and p represents an integer of 1 or 2.

2. The polyester fibers as claimed in claim 1, wherein in each of the component (A) of the mixture (1) and the component (C) of the reaction products (2) for the catalyst, a reaction molar ratio of each of titanium alkoxides (a) and (c) to the aromatic polycarboxylic acid of the general formula (II) or the anhydride thereof is in the range of from 2:1 to 2:5.

3. The polyester fibers as claimed in claim 1, wherein in the reaction product (2) for the catalyst, a reaction amount ratio of the component (D) to the component (C) is in the range of, in terms of ratio (P/Ti) of the molar amount of phosphorus atoms contained in the component (D) to the molar amount of titanium atoms contained in the component (C), from 1:1 to 3:1.

4. The polyester fibers as claimed in claim 1, wherein the phosphorus compound of the general formula (IV) for the reaction product (2) is selected from monoalkyl phosphates.

5. The polyester fibers as claimed in claim 1, wherein the dialkyl aromatic dicarboxylate ester is one produced by a transesterification reaction of a dialkyl ester of an aromatic dicarboxylic acid with an alkylene glycol in the presence of a titanium-containing catalyst.

6. The polyester fibers as claimed in claim 1 or 2, wherein the aromatic dicarboxylic acid is selected from terephthalic acid, 1,2-naphthalene dicarboxylic acid, phthalic acid, isophthalic acid, diphenyldicarboxylic acid and diphenoxyethane

dicarboxylic acid; and the alkylene glycol is selected from ethylene glycol, butylene glycol, trimethylene glycol, propylene glycol, neopentyl glycol, hexamethylene glycol and dodecamethylene glycol.

7. The polyester fibers as claimed in claim 1, wherein the polyester polymer is selected from polyethylene terephthalate, polytrimethylene terephthalate and polytetramethylene terephthalate.

8. The polyester fibers as claimed in any one of claims 1 to 7, wherein the polyester polymer has an intrinsic viscosity of 0.45 to 0.70, determined from a solution in orthochlorophenol at a temperature of 35°C.

9. A false twist-textured yarn comprising the polyester fibers as claimed in any one of claims 1 to 8.

10. The false twist-textured yarn as claimed in claim 9, wherein a difference between a L* value and a b* value of the false twist-textured polyester fiber yarn is in the range of from 91.0 to 99.0.